Supporting Information

Nanofiber fabric based ion-gradient-enhanced moist-electric generator with a sustained voltage output of 1.1 volts

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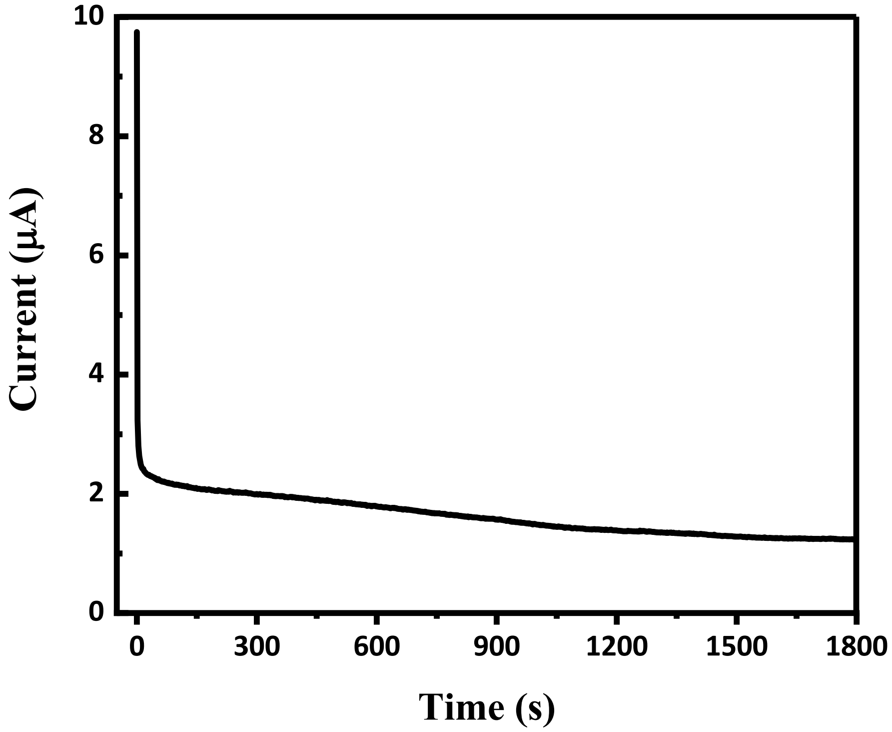

Fig. S1. Current output of PAN/PSSA (5:1) nanofiber fabric based MEG.

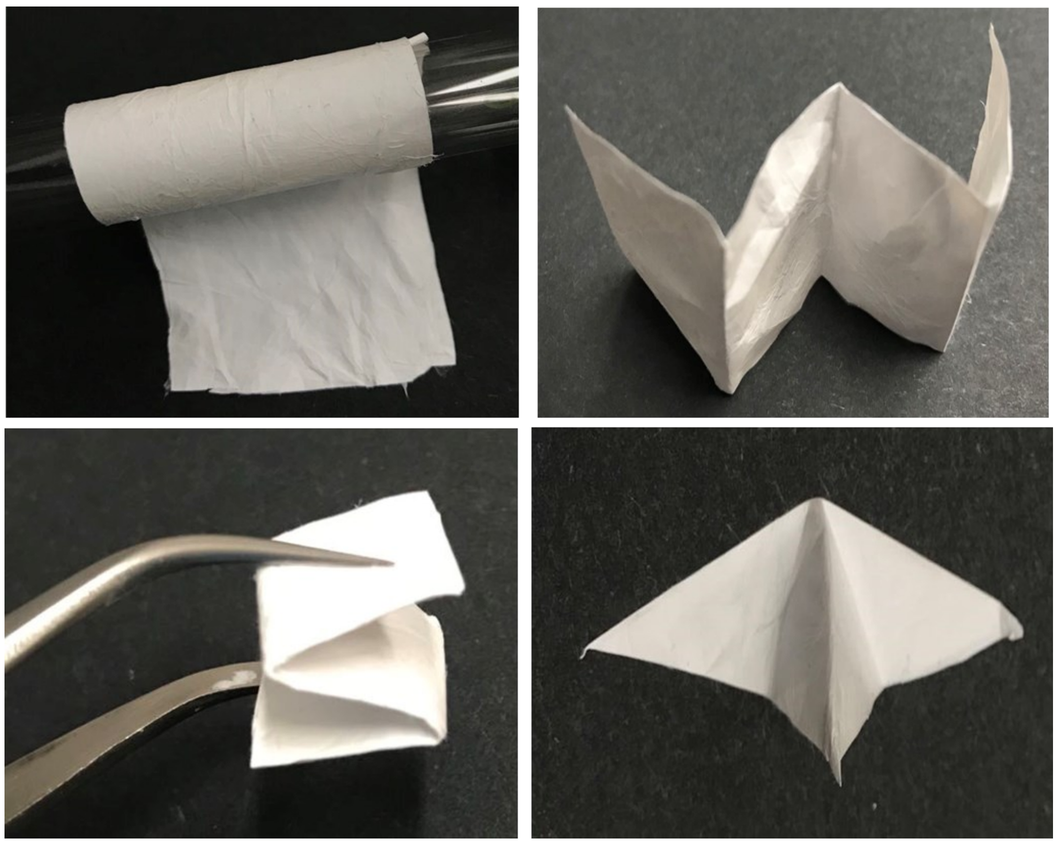

Fig. S2. Digital photos of the prepared large-area, flexible and deformable PAN/PSSA nanofiber fabric.

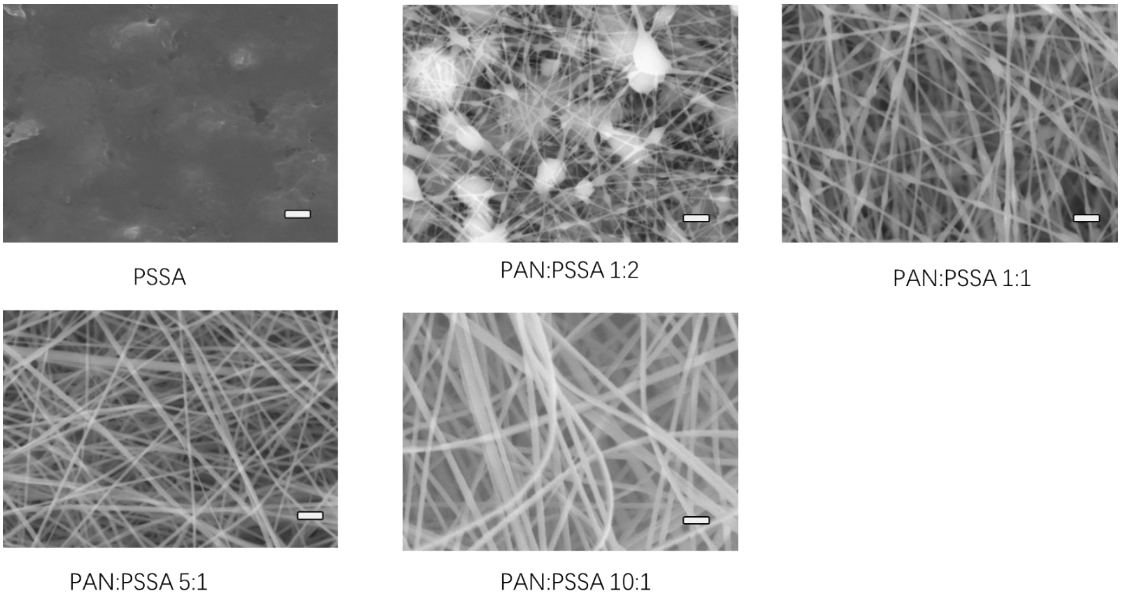

Fig. S3. SEM images of PSSA and PAN/PSSA nanofiber fabrics with different doping ratio. All the scale bars are 1 μm.

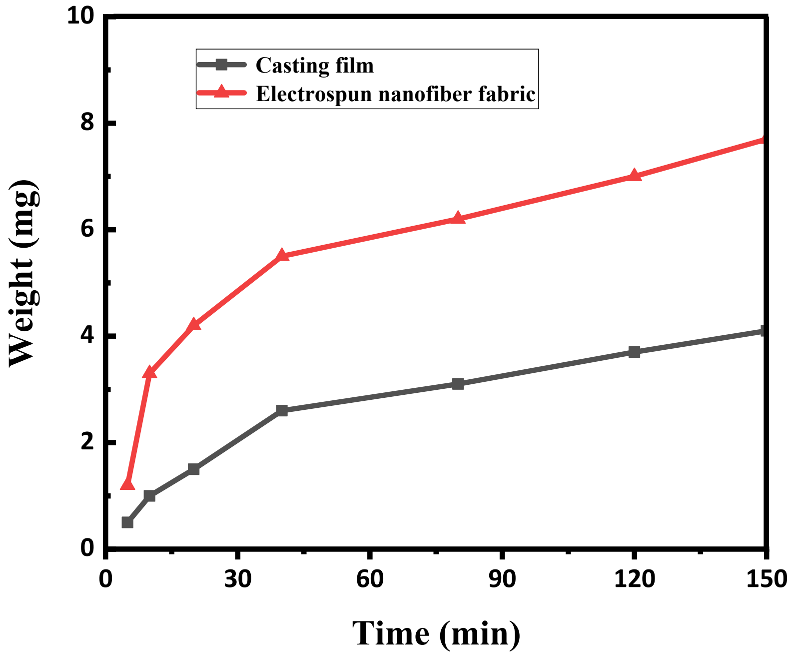

Fig. S4. The difference in moisture harvest for electrospun PAN/PSSA (5:1) nanofiber fabric and casted PAN/PSSA (5:1) film.

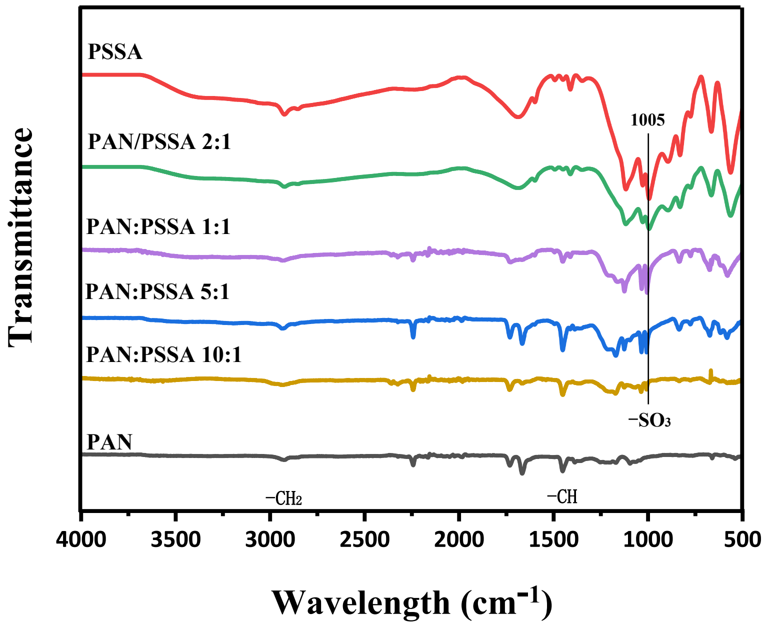

Fig. S5. FTIR spectra of PAN, PSSA and PAN/PSSA with different ratios.

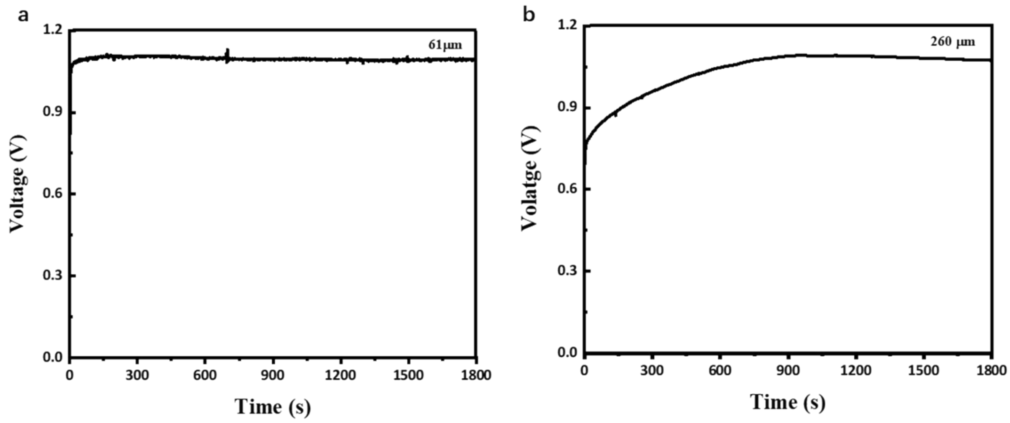

Fig. S6. Voltage output of PAN:PSSA (5:1) nanofiber fabirc with thickness around (a) 61 μm, and (b) 260 μm. The thickness was controlled by changing electrospinning time from 2 h to 10 h.

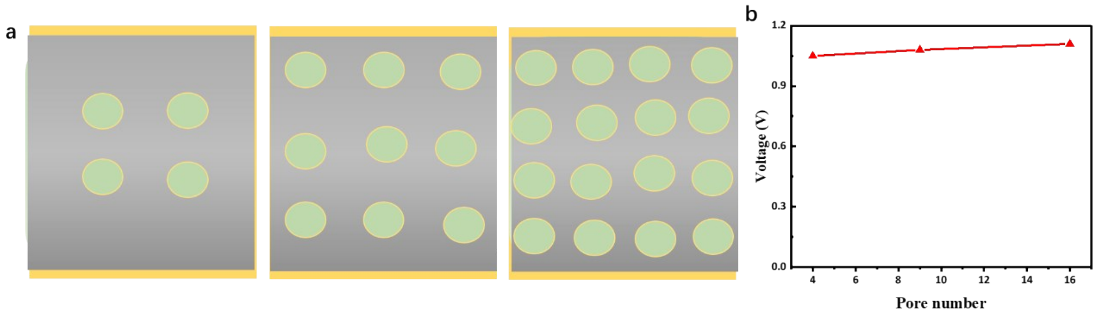

Fig. S7. (a) Schematic diagram of ion-gradient-enhanced MEG with different pore on top electrode and (b) their voltage outputs.

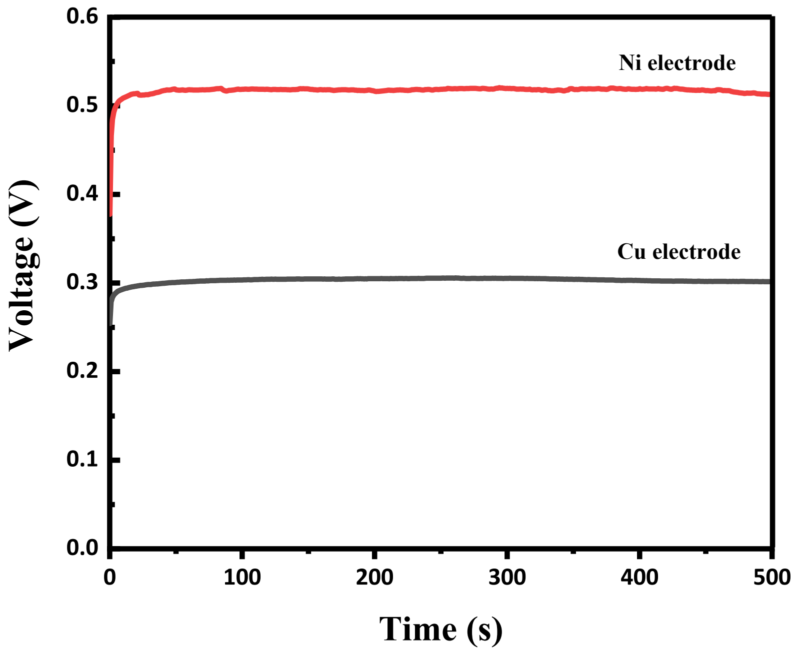

Fig. S8. Voltage outputs of PAN/PSSA of 5:1 under RH~80% and 25 ^{o}C with different top porous metal electrodes.

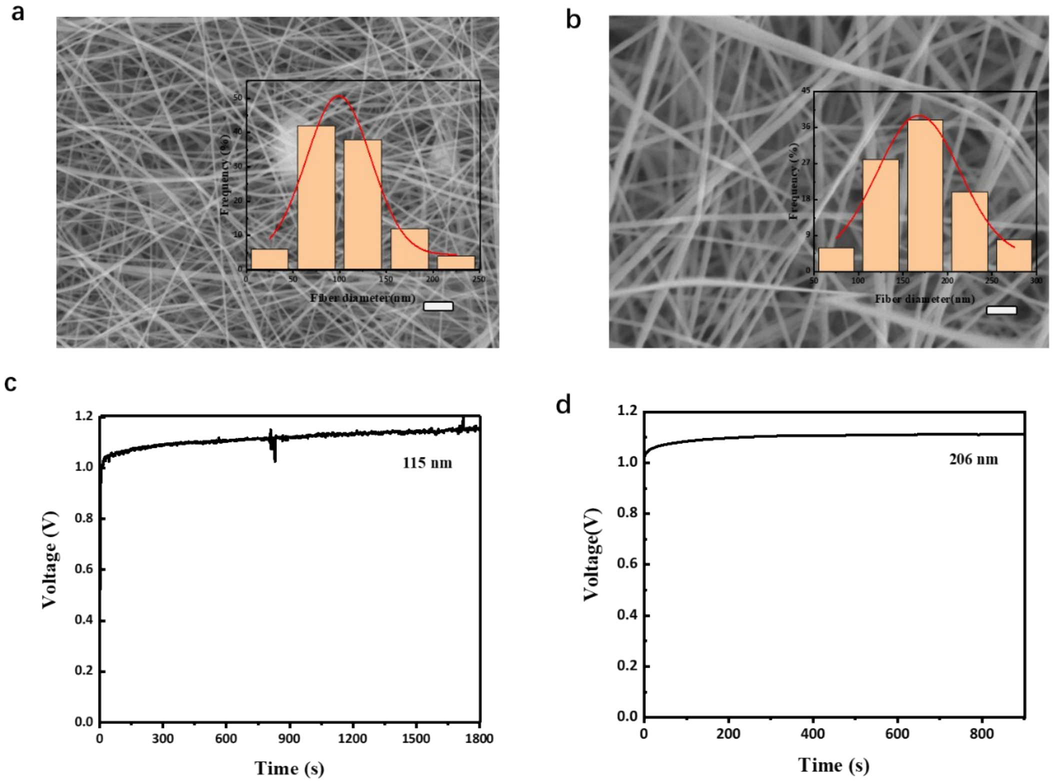

Fig. S9. (a, b) SEM images and (c, d) voltage outputs of PAN/PSSA (5:1) nanofiber fabrics with different fiber diameters. (a, c) Average diameter around 115 nm. (b, d). Average diameter around 206 nm. All the scale bars are 1 μm. The fiber diameter was adjusted by changing applied voltage in electrospinning process. The applied voltages were 13 kV and 20 kV for producing fibers with diameter of 206 nm and 115 nm, respectively.

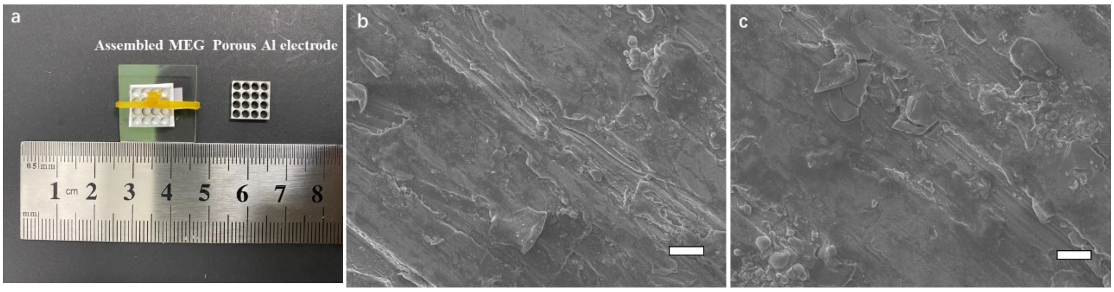

Fig. S10. (a) Digital photo picture of assembled MEG and the top porous Al electrode. (b, c) SEM images of porous Al electrode before the long-term test of 40000 s and after the long-term test, and the surface morphology is without any change. All scale bars are 20 μm.

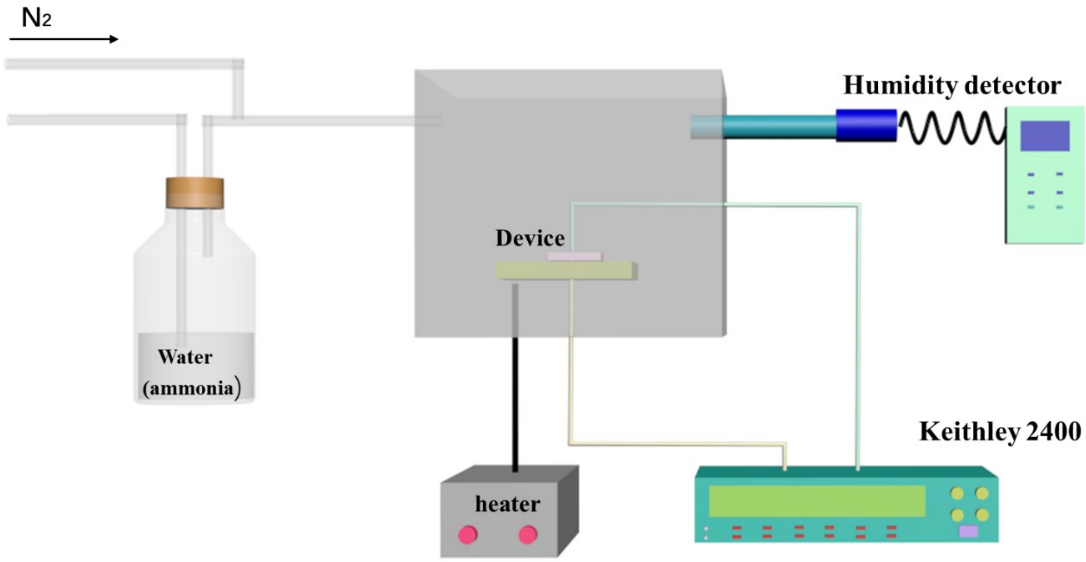

Fig. S11. Schematic diagram of home-built moisture circulating system.

Table S1. Summary of recent rising MEGs.

Ref.	Material	Form	Maintain time without recharge (one burst)	Voltage	Current density
1	GO	Film	10s	0.026 V	5 μA cm^{-1}
2	GO	Printed film	100s	0.45 V	2 μA cm^{-1}
3	GO	3D-aerogel	2s	0.3 V	3.5 mA cm^{-1}
4	GO	Fiber shape	60s	0.3 V	0.7 μA cm^{-1}
5	GO	film	100s	0.4V	2 μA cm^{-1}
6	Carbon	Carbon dots on paper	900s	0.04 V	0.142 μA cm^{-1}
7	PPy	Nanowire	2s	0.072 V	0.14 μA cm^{-1}
8	PPy	3D framework	7s	0.06V	2.5 μA cm^{-1}
9	PSSA	Membrane	At least 1600s	0.8 V	0.15 mA cm^{-1}
10	Cellulose	Paper	400s	0.25 V	15 nA cm^{-1}
11	Protein	Nanowires	Self-recharging	0.5 V	115 nA cm^{-1}
12	Silk	nanofiber	600s	0.13 V	0.1 μA cm^{-1}
Our work	**PAN/PSSA**	**Electrospun nanofiber fabric**	**Over 40000s**	**1.1 V**	**1.35 μA cm^{-1}A**

References

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